Claims

1. Article made of magnesium or its alloys, some or all of whose surface has a conversion coating, characterized in that the conversion coating comprises MgO, Mn_2O_3 and MnO_2 plus at least one oxide from the group consisting of vanadium, molybdenum and tungsten.

2. Article according to Claim, 1 characterized in that the conversion coating is obtainable by passivating the article using an aqueous passivating electrolyte which comprises potassium permanganate and at least one alkali metal salt or ammonium salt of an anion from the group consisting of vanadate, molybdate and tungstate.

3. Article according to Claim 1 or 2, characterized in that in addition to the conversion coating a polymer coating has been applied which is obtainable by polymerizing and/or crosslinking a solution comprising at least one alkoxysilane compound.

4. Article according to Claim 3, characterized in that the alkoxysilane compound is of the general formula

$$R^1_aR^2_bSiX_{(4-a-b)}$$

in which

- X is an alkoxy, aryloxy or acyloxy group of 1 to 12 carbon atoms, preferably of 1 to 4 carbon atoms, and in particular is selected from the group consisting of methoxy, ethoxy, n-propoxy, i-propoxy, butoxy, phenoxy, acetoxy and propionyloxy groups;

- R^1 and R^2, which are identical to or different from one another, are selected from the group consisting of
  - amino, monoalkylamino or dialkylamino radicals;
  - alkyl radicals, especially the alkyl radicals of 1 to 6 carbon atoms, preferably the methyl, ethyl, n-propyl, isopropyl, n-butyl, s-butyl, t-butyl, pentyl, hexyl or cyclohexyl radicals;
  - alkenyl radicals, especially the alkenyl radicals of 2 to 6 carbon atoms, preferably the vinyl, 1-propenyl, 2-propenyl or butenyl radicals;
  - alkynyl radicals, especially the alkynyl radicals of 2 to 6 carbon atoms, preferably the acetylenyl or propargyl radicals;
  - aryl radicals, especially the aryl radicals of 6 to 10 carbon atoms, preferably phenyl or naphthyl radicals;
  - epoxy radicals, especially the epoxy radicals of 3 to 16 carbon atoms, preferably the glycidyl, glycidyl ether, glycidyl ester or glycidyloxyalkyl radicals; or
  - group X described above; and
- a and b, which are identical to or different from one another, are 0, 1, 2 or 3, the sum of a and b not exceeding 3.

5. Article according to Claim 4, characterized in that the alkoxysilane compound is a tetraalkoxysilane, epoxyalkoxysilane or aminoalkoxysilane.

6. Article according to Claim 5, characterized in that the alkoxysilane compound is selected from the group consisting of tetraethoxysilane, 3-glycidyloxypropyltrimethoxysilane, 3-aminopropyltrimethoxysilane and 3-(aminoethylamino)propyltrimethoxysilane.

7. Article according to any of Claims 3 to 6, characterized in that the solution additionally comprises a compound capable of forming a titanium complex.

8. Article according to Claim 7, characterized in that the compound capable of forming a titanium complex is an alkoxytitanium compound, a titanic ester or a titanium chelate and in particular is of the formula $Ti(OR)_4$ in which R is an alkyl radical of 1 to 6 carbon atoms selected preferably from the group consisting of methyl, ethyl, n-propyl, i-propyl and butyl radicals.

9. Article according to Claim 8, characterized in that the compound capable of forming a titanium complex is tetraethoxytitanate $Ti(OC_2H_5)_4$.

10. Article according to any of Claims 3 to 9, characterized in that the solution additionally comprises at least one dye which is soluble in a polar solvent, in particular a metal complex dye.

11. Process for producing a conversion coating on an article made of magnesium or its alloys, characterized in that the article is subjected to passivation using an aqueous passivating electrolyte which comprises potassium permanganate and at least one alkali metal salt or ammonium salt of an anion from the group consisting of vanadate, molybdate and tungstate.

12. Process according to Claim 11, characterized in that the passivation is conducted within a pH range of the aqueous passivating electrolyte of from 7.0 to 8.0.

13. Process according to Claim 11 or 12, characterized in that the passivation is conducted at a temperature of the aqueous passivating electrolyte of from 15 to 50 °C, in particular from 20 to 30 °C.

14. Process according to any of Claims 11 to 13, characterized in that the passivation is conducted for a period of from 2 to 10 minutes.

15. Process according to any of Claims 11 to 14, characterized in that the concentration of potassium permanganate in the aqueous passivating electrolyte is from 1 to 10 g/l.

16. Process according to any of Claims 11 to 15, characterized in that the concentration of the alkali metal salt or ammonium salt from the group consisting of vanadate, molybdate and tungstate in the aqueous passivating electrolyte is from 1 to 10 g/l.

17. Process according to any of Claims 11 to 16, characterized in that a paint or other surface coating material is or has been applied to the conversion coating.

18. Use of a solution for producing an article according to any of Claims 3 to 10, characterized in that the solution comprises at least one alkoxysilane compound according to any of Claims 3 to 9.

19. Use of an article according to any of Claims 1 to 10 and of an article obtainable by a process as claimed in any of Claims 11 to 17 in the motor vehicle industry, electrical and electronics industry, mechanical engineering industry, air travel and space travel.